IN THE CLAIMS:

Please AMEND claims 16-18 and ADD new claims 20-27, as follows. For the Examiner's convenience, all claims currently pending in this application have been reproduced below:

1. (Previously Presented) A projection exposure apparatus, comprising:

an exposure light source;

an illumination system for illuminating a pattern, formed on a first object, with light from said exposure light source;

a projection optical system for projecting the pattern, as illuminated with the light, onto a second object; and

an interferometer for use in measurement of an optical characteristic of said projection optical system, wherein said interferometer is operable to perform the measurement by use of light from said exposure light source.

2. (Original) An apparatus according to Claim 1, wherein said interferometer is operable to measure at least one of wavefront aberration, field curvature and distortion of said projection optical system.

3. (Previously Presented) An apparatus according to Claim 1, wherein said interferometer is disposed on one side of said projection optical system, facing the first object.

4. (Previously Presented) An apparatus according to Claim 1, wherein said interferometer is disposed on one side of said projection optical system, facing the second object.

5. (Previously Presented) An apparatus according to Claim 1, wherein said illumination system includes incoherency transforming means for incoherency transforming the exposure light from said exposure light source and for directing the same to the first object, and wherein a light path switching means is disposed between said exposure light source and said incoherency transforming means, by which the light from said exposure light source can be selectively directed to one of said interferometer and said incoherency transforming means.

6. (Previously Presented) An apparatus according to Claim 1, wherein said interferometer includes a collimator lens mountably and demountably inserted on a path of the exposure light, for transforming, into parallel light, light converged on and diverged from one of the surface of the first object and the surface of the second object.

7. (Original) An apparatus according to Claim 1, wherein said interferometer has a function for making optical path lengths for reference light and detection light registered with each other.

8. (Previously Presented) An apparatus according to Claim 1, further comprising an alignment scope having an objective lens, for alignment between the first and second objects, wherein said interferometer includes a collimator lens for transforming, into parallel light, light

converged on and diverged from one of the surface of the first object and the surface of the second object, and wherein said objective lens of said alignment scope functions also as said collimator lens.

9. (Previously Presented) An apparatus according to Claim 1, further comprising reflection means disposed on one side of said projection optical system facing to one side of said projection optical system facing to one of the first and second objects, wherein the light passing through said projection optical system is reflected by said reflection means backwardly along its oncoming path, so that it is directed to said interferometer.

10. (Original) An apparatus according to Claim 9, wherein said reflection means comprises one of a spherical surface mirror, a plane mirror and a wafer.

11. (Original) An apparatus according to Claim 9, wherein said reflection means is provided on a movable stage for carrying thereon the second object.

12. (Original) An apparatus according to Claim 9, wherein a field curvature of said projection optical system is detected on the basis of a revolutionally symmetrical component involved in a wavefront as measured by said interferometer and of coordinate positions, with respect to an optical axis direction, of said reflection means and said collimator lens of said interferometer upon measurement of the wavefront.

13. (Original) An apparatus according to Claim 12, wherein the revolutionally symmetrical component is a power component.

14. (Original) An apparatus according to Claim 9, wherein distortion of said projection optical system is detected on the basis of a revolutionally asymmetrical component involved in a wavefront as measured by said interferometer and of coordinate positions, with respect to an optical axis direction, of said reflection means and said collimator lens of said interferometer upon measurement of the wavefront.

15. (Original) An apparatus according to Claim 12, wherein the revolutionally asymmetrical component is a tilt component.

16. (Currently Amended) An exposure method comprising the steps of:

illuminating a pattern formed on a ~~first object~~ reticle, by use of light from an exposure light source;

projecting the pattern onto ~~a second object~~ an object to be exposed, by use of a projection optical system; and

measuring an optical characteristic of the projection optical system by use of an interferometer and on the basis of light from the exposure light source.

17. (Currently Amended) A device manufacturing method comprising the steps of:

preparing a ~~mask~~ reticle;

illuminating a pattern formed on the ~~mask~~ reticle, by use of light from an exposure light source;

projecting the pattern onto ~~a substrate~~ an object to be exposed, by use of a projection optical system; and

measuring an optical characteristic of the projection optical system by use of an interferometer and on the basis of light from the exposure light source.

18. (Currently Amended) An exposure method comprising the steps of:

illuminating a pattern formed on a ~~first object~~ reticle, by use of light from an exposure light source;

projecting the pattern onto ~~a second object~~ an object to be exposed, by use of a projection optical system; and

measuring an optical characteristic of the projection optical system by use of an interferometer.

19. (Previously Presented) A method according to Claim 18, further comprising performing at least one of spacing adjustment and eccentricity adjustment for an optical element of the projection optical system, in accordance with the measurement in said measuring step.

20. (New) A projection exposure apparatus comprising:

a projection optical system for projecting a pattern, illuminated with light from a light source, onto an object to be exposed;

an interferometer for measuring an optical characteristic of said projection optical system, by use of light from the light source; and

an adjusting mechanism for adjusting aberration of said projection optical system, on the basis of the result of the measurement by said interferometer.

21. (New) An apparatus according to Claim 20, wherein said adjusting mechanism includes driving means for moving a predetermined lens of said projection optical system in an optical axis direction of said projection optical system.

22. (New) An apparatus according to Claim 20, wherein said adjusting mechanism includes driving means for moving a predetermined lens of said projection optical system in a direction perpendicular to an optical axis direction of said projection optical system.

23. (New) An apparatus according to Claim 20, wherein said adjusting mechanism includes driving means for moving a predetermined lens of said projection optical system in a direction having a tilt with respect to an optical axis direction of said projection optical system.

24. (New) An apparatus according to Claim 20, wherein said adjusting mechanism includes a spacing adjusting mechanism for adjusting a spacing between lenses of said projection optical system.

25. (New) An apparatus according to Claim 20, wherein said adjusting mechanism includes an eccentricity adjusting mechanism for adjusting an eccentricity amount of a lens of said projection optical system.

26. (New) An apparatus according to Claim 20, wherein said interferometer measures the optical characteristic of said projection optical system on the basis of a fringe scan method.

27. (New) An apparatus according to Claim 20, wherein said interferometer measures the optical characteristic in a single path with respect to said projection optical system.